

IN THE CLAIMS

1. (Currently amended) An apparatus comprising:
 - a main memory for storing data;
 - one or more I/O devices for receiving data from or sending data to said main memory;
 - a control unit for controlling said I/O devices;
 - an I/O processor (IOP) for controlling I/O operations for sending data between said main memory and said I/O devices;
 - disparate channels between said IOP and said control unit, said disparate channels including multiple channel paths for carrying data between said main memory and said I/O devices during said I/O operations, said disparate channels including more than one type of channel; and
 - a computer program executed by said IOP for assigning a path weight to selected ones of said channel paths whereby the next channel path to carry data between said main memory and said I/O devices is selected-;
 - wherein said computer program includes an algorithm for assigning a path weight to a channel path candidate dependent upon the type of channel containing the channel path candidate.
2. (Cancelled)
3. (Original) The apparatus of claim 1 wherein said disparate channels comprises one or more channel types including ESCON channels, FICON bridge (FCV) channels, or FICON Native (FC) channels.
4. (Cancelled)
5. (Currently amended) The apparatus of claim 1[[4]] wherein the next channel path candidate is selected by a round robin algorithm.
6. (Currently amended) The apparatus of claim 1[[4]] comprising channel busy data (CBD) stored by each channel for containing the status of channel paths in the respective channel, and an IOP copy of said CBDs stored by said IOP, and said computer program

includes an algorithm for using data in said CBDs for assigning a path weight to a channel path candidate.

7. (Original) The apparatus of claim 6 wherein said computer program classes a channel path candidate as a great candidate, a bad candidate, or an OK candidate dependent on the value of the given channel path's path weight value, said computer program further including an algorithm for selecting the channel path candidate to initiate the I/O operation on if it is classed as a great candidate, evaluating the next candidate if it is classed as an OK channel path or a bad channel path, or selecting the OK candidate with the least path weight to initiate the I/O operation on if there are no great candidates found while rejecting any bad candidates.

8. (Original) The apparatus of claim 7 further comprising multiple IOPs, each channel path having an affinity to one IOP, a work queue having work elements for each IOP, and said computer program comprises a loop for determining the best class of available candidates, and from that class picking the candidate that has affinity to the IOP with the least number of work elements on its work queue.

9. (Currently amended) A data processing system having a main memory for storing data, one or more I/O devices for receiving data from or sending data to said main memory, and an I/O processor (IOP) for controlling I/O operations for sending data between said main memory and said I/O devices, an apparatus for selecting paths between the main memory and the I/O devices comprising:

disparate channels between the IOP and the I/O devices, said disparate channels including multiple channel paths for carrying data between the main memory and the I/O devices during the I/O operations, said disparate channels including more than one type of channel; and

a computer program executed by said IOP for assigning a path weight to selected ones of said channel paths whereby the next channel path to carry data between said main memory and said I/O devices is selected;-

wherein said computer program includes an algorithm for assigning a path weight to a channel path candidate dependent upon the type of channel containing the channel path candidate.

10. (Cancelled)

11. (Original) The apparatus of claim 9 wherein said disparate channels comprises one or more channel types including ESCON channels, FICON bridge (FCV) channels, or FICON Native (FC) channels.

12. (Cancelled)

13. (Currently amended) The apparatus of claim ~~9~~¹² wherein the next channel path candidate is selected by a round robin algorithm.

14. (Currently amended) The apparatus of claim ~~9~~¹² comprising channel busy data (CBD) stored by each channel for containing the status of channel paths in the respective channel, and an IOP copy of said CBDs stored by said IOP, and said computer program includes an algorithm for using data in said CBDs for assigning a path weight to a channel path candidate.

15. (Original) The apparatus of claim 14 wherein said computer program classes a channel path candidate as a great candidate, a bad candidate, or an OK candidate dependent on the value of the given channel path's path weight value, said computer program further including an algorithm for selecting the channel path candidate to initiate the I/O operation on if it is classed as a great candidate, evaluating the next candidate if it is classed as an OK channel path or a bad channel path, or selecting the OK candidate with the least path weight to initiate the I/O operation on if there are no great candidates found while rejecting any bad candidates.

16. (Original) The apparatus of claim 15 further comprising multiple IOPS, each channel path having an affinity to one IOP, a work queue having work elements for each IOP, and said computer program comprises a loop for determining the best class of available candidates, and from that class picking the candidate that has affinity to the IOP with the least number of work elements on its work queue.

17. (Currently amended) A method for selecting channel paths in a data processing system having a main memory for storing data, one or more I/O devices for receiving data from or sending data to said main memory, an I/O processor (IOP) for controlling I/O

operations for sending data between said main memory and said I/O devices, and disparate channels between the IOP and the I/O devices, said disparate channels including multiple channel paths for carrying data between the main memory and the I/O devices during the I/O operations, said disparate channels including more than one type of channel, said method comprising:

- assigning a path weight to selected ones of said channel paths; and
- selecting the next channel path to carry data between said main memory and said I/O devices based on said path weight;

- assigning a path weight to a channel path candidate dependent upon the type of channel containing the channel path candidate.

18. (Cancelled)

19. (Original) The method of claim 17 further comprising including within said disparate channels, one or more channel types including ESCON channels, FICON bridge (FCV) channels, or FICON Native (FC) channels.

20. (Cancelled)

21. (Currently amended) The method of claim ~~17~~²⁰ further comprising selecting the next channel path candidate by a round robin algorithm.

22. (Currently amended) The method of claim ~~17~~¹⁸ comprising storing channel busy data (CBD) by each channel, said CBD containing the status of channel paths in the respective channel, and storing by said IOP, an IOP copy of said CBDs, and said using data in said CBDs for assigning a path weight to a channel path candidate.

23. (Original) The method of claim 22 further comprising:

- classifying a channel path candidate as a great candidate, a bad candidate, or an OK candidate dependent on the value of the given channel path's path weight value; and

- selecting the channel path candidate to initiate the I/O operation on if it is classed as a great candidate, evaluating the next candidate if it is classed as an OK channel path or a bad channel path, or selecting the OK candidate with the least path weight to initiate the I/O operation on if there are no great candidates found while rejecting any bad candidates.

24. (Original) The method of claim 23 wherein said data processing system includes multiple IOPs, each channel path having an affinity to one IOP, a work queue having work elements for each IOP, and said method further comprises:

performing a loop for determining the best class of available candidates; and
from that class, picking the candidate that has affinity to the IOP with the least number of work elements on its work queue.

25. (Currently amended) A program product usable with in a data processing system having a main memory for storing data, one or more I/O devices for receiving data from or sending data to said main memory, an I/O processor (IOP) for controlling I/O operations for sending data between said main memory and said I/O devices, and disparate channels between the IOP and the I/O devices, said disparate channels including multiple channel paths for carrying data between the main memory and the I/O devices during the I/O operations, said disparate channels including one or more type of channel, said program product comprising:

A computer readable medium having recorded thereon computer readable program code means for performing the method comprising:

assigning a path weight to selected ones of said channel paths; and
selecting the next channel path to carry data between said main memory and said I/O devices based on said path weight; and-

assigning a path weight to a channel path candidate dependent upon the type of channel containing the channel path candidate.

26. (Cancelled).

27. (Original) The program product of claim 25 wherein said method further comprises including within said disparate channels, one or more channel types including ESCON channels, FICON bridge (FCV) channels, or FICON Native (FC) channels.

28. (Cancelled)

29. (Currently amended) The program product of claim ~~25~~²⁸ wherein said method further comprises selecting the next channel path candidate by a round robin algorithm.

30. (Currently amended) The program product of claim ~~25~~26 wherein said method comprises storing channel busy data (CBD) by each channel, said CBD containing the status of channel paths in the respective channel, and storing by said IOP, an IOP copy of said CBDs, and said using data in said CBDs for assigning a path weight to a channel path candidate.

31. (Original) The program product of claim 30 wherein said method further comprises:
classifying a channel path candidate as a great candidate, a bad candidate, or an OK candidate dependent on the value of the given channel path's path weight value; and
selecting the channel path candidate to initiate the I/O operation on if it is classed as a great candidate, evaluating the next candidate if it is classed as an OK channel path or a bad channel path, or selecting the OK candidate with the least path weight to initiate the I/O operation on if there are no great candidates found while rejecting any bad candidates.

32. (Original) The program product of claim 31 wherein said data processing system includes multiple IOPs, each channel path having an affinity to one IOP, a work queue having work elements for each IOP, and said method further comprises:
performing a loop for determining the best class of available candidates; and
from that class, picking the candidate that has affinity to the IOP with the least number of work elements on its work queue.